A case of an unerupted maxillary central incisor for indirect trauma localized horizontally on the anterior nasal spine

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The present paper emphasizes the importance of early diagnosis of retarded eruption because of trauma and the plan for the surgical management of impacted teeth. The permanent incisor was localized horizontally on the nasal spine and the roots seemed to be in a retarded stage of formation beside of contralateral tooth. The treatment plan consisted in the valuation of the necessity of space to move the impacted incisor in the normal position and the biomechanical approach for the anchorage.
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INTRODUCTION

Trauma to the anterior area of the primary dentition may lead to abnormality in the path of eruption of permanent series, which may result in impaction or ectopic eruption. The presence of impacted teeth pose some clinical problems, especially for the anterior region, in the stage of the early mixed dentition.[1-4] This is because the central incisor usually erupts years before the canine and it is also more inauspicious to parents. A change in position, root dilaceration, and disturbed mineralization are but a few of the possible sequelae to early trauma.[5, 6] Once the tooth position or the root formation is affected, normal eruption may be impeded. Clinical examination can reveal an alteration of normal dental formula, but radiography is the only accurate procedure for detection and diagnosis of impacted teeth. The necessity and timing for surgical intervention is also based on radiographic findings. Early diagnosis is very important to monitor and to prevent complications. Orthodontic management of the impacted teeth can be incorporated into the overall treatment objective of mixed dentition: to monitor perimeter of the arch and stabilize the necessity of space and eventually to create it; to approach a good type of anchorage and guide eruption of the impacted teeth; to obtain a correct posterior transverse diameter and class I canine and molar relationships bilaterally; to establish ideal overbite and overjet. Subsequent aesthetic and periodontal problems may follow.[7,8] Gingival recession together with a long clinical or a collar of reddish gingival are often seen. Even the successful cases probably have an unaesthetic gingiva of the exposed incisor and may require a periodontal gingival recontouring procedure.[9, 10]

The present paper emphasizes the importance of early diagnosis of retarded eruption because of a trauma and to plane the surgically management of impacted teeth.

CASE REPORT

A 7-year-old boy appeared for an initial examination with the chief complaint of noneruption of the maxillary left permanent central incisor. The parents stated that the maxillary primary left central incisor was prematurely lost. The mother reported that at the age of 4 years old the child had had a facial and alveolar traumatic injury. This trauma induced intrusion o the maxillary primary left central incisor that after some time exhibited discoloration and months later it exfoliated prematurely.

At the clinical evaluation the face of the patient was symmetrical with a light concave profile. Intraoral examination revealed an early mixed dentition comprising maxillary permanent right central incisor and

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Figure 1. Initial intraoral view of patient.

Figure 4. Periodical rx-panoramic using to monitor the movement of the impacted tooth.

lateral incisors, mandibular permanent incisors and maxillary and mandibular first permanent molars (Figure 1). The patient presented with an Angle Class II molar and canine relationship. Inadequate space distribution of the maxillary incisors causing the upper midline deviation to the left was due to drifting of the adjacent teeth into unoccupied space. The gingival tissue around the space of inherited incisor appeared traumatized. Maxillary and mandibular arch did not showed any additional abnormalities. Rx-orthopanoramic demonstrated the complete set of permanent teeth in different stage of formation and the impaction of upper permanent left central incisor. Radiographic examination consisting in orthopanoramic, latero-lateral and occlusal revealed that the impacted tooth was positioned horizontally (Figures 2-3). The crown was close to the anterior nasal spine and across the midline and the root was displaced palatally.

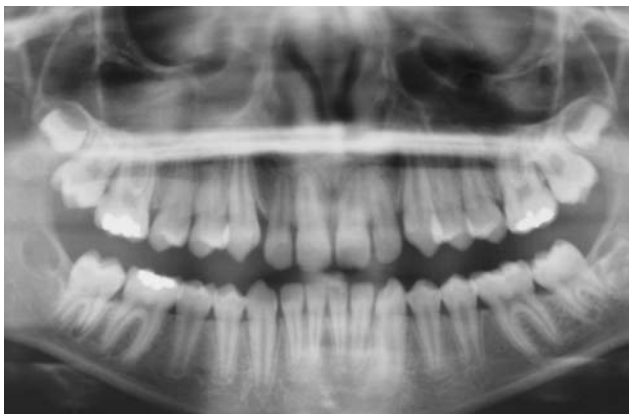
The treatment plan consisted in the evaluation of the:

1. Necessity of space to move the impacted incisor in a normal position.
2. Biomechanical approach for the anchorage.

On gaining sufficient space for the central incisor the treatment plan was to expose surgically the impacted tooth, bond and move it carefully to a normal position. Palatal arch wire fixed with bands on the second upper primary molars was applied to maintain the space and to permit the traction of the impacted tooth. Once adequate anchorage was achieved the patient was transferred to the oral surgeon for exposure of the impacted incisor. An attachment was bonded during the exposure, and the flap was sutured back over the crown, leaving a 0.010 inch ligature wire fixed on the button and passing through the mucosa to apply the orthodontic traction. Elastic traction continued until the incisor became exposed to the oral environment.

Periodical rx-panoramic was required to monitor the movement of the impacted tooth (Figure 4). After 12 months upper permanent left central incisor appeared in the arch. The palatal arch was removed and edgewise brackets were directly bonded to the upper incisors, to obtain a correct alignment of the impacted tooth (Figures 5-6). Final radiographs showed adequate root formation and position of previously unerupted tooth.

Figures 2-3. Initial radiographs including ortophanoramic, latero-lateral radiographs revealing the presence of retained tooth.



Figures 5-6. Final frontal view of patient and final rx-ortophanoramic.

DISCUSSION

If there is significant delay in the eruption of a tooth after the other has erupted, the presence of a causative factor should be suspected.[5] In this case traumatic injury at 4 years of age along with the prolonged retention of the deciduous maxillary central left incisor is believed to have led to the impaction and malposition of the permanent dental series. The impacted maxillary central incisors pose a problem at an earlier age: depending on the developmental stage of the permanent incisor, indirect trauma would be transmitted to it through the primary tooth.[3,6]

In this case permanent incisor was localized horizontally on the nasal spine and the roots seemed to be in a retarded stage of formation beside of contra lateral tooth which probably resulted from the premature loss of the primary teeth due a trauma with subsequent partial closure of the area. When a maxillary incisor is impacted, every effort should be made to regain the space and align the tooth in the correct location orthodontically.[8,10] Informing the parent of the possible sequelae to the permanent successor is a vital part of the treatment. In this case considering the position of the impacted tooth, the orientation and the calculated arch length discrepancy, it seemed at first quite difficult to bring the maxillary left central incisor into dental arch. However a good management of space and adequate direction of traction have permitted to recuperate impacted tooth.

Trauma to primary incisors may cause structural defects in the developing succedaneous teeth or affect the position. This patient demonstrated the severe consequences that may result secondarily from trauma sustained at a young age. Appropriate radiographs and a thorough history are necessary components for diagnosis, treatment, and follow-up care.[9]

Frequently, when an impacted central incisor is brought into the arch there is a discrepancy between the gingival height and that of the adjacent central incisor. Clinical experience has shown that light forces are more effective than heavy forces in moving impacted and unerupted teeth and providing good gingival position and contour.

CONCLUSION

A traumatic injury in early age can realize a delay of eruption and eventually an impacted tooth. Upper incisors are the most frequent impacted teeth due a trauma. Specific objectives of treatment are related with:

- Evaluation of eruption pattern of the patient (estimated radiographically);
- Biomechanical approach for the anchorage;
- Evaluation of necessity of space and create it;
- Surgical exposure and guide eruption of the impacted incisor;
- To establish a good occlusion.

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